Welcome to SimGas

SimGas is a commercial biogas company that develops, sells and installs biogas digesters for rural households in East Africa

Why? Because biogas digesters are life-, money-, time- and climate savers

With 2,500 sales reaching 12,500 people to date, SimGas (est. 2009) is already the largest domestic biogas company in Africa

By 2030 our domestic biogas products will improve the lives of 10 million people in Africa and Asia
Every day (rural) households in Africa and Asia endanger their lives, lose money and time, by cooking on solid fuels

Pains

Alternatives are not viable: access to electricity in rural East Africa is <4-8% and solar is not a low-cost solution for cooking

Rural households in developing countries require energy mainly for cooking, lighting and charging phones, of which ~90% accounts for cooking (GIZ 2017). Solar home systems provide excellent low-cost solutions for lighting, charging phones, powering a radio or even televisions. But not for cooking, which requires ~2 kW for ~3.5 h a day. Off-grid solar home systems for >1kW costs between 2.5 USD/W and 16 USD/W (IRENA 2016), which is much more than the costs of using woodfuel and charcoal for the same.

1 Expensive to be poor

$53 per month is spent on woodfuel/charcoal, which is 35-45% of the household budget. The lack of alternatives keeps households poor.

2 Indoor air pollution

Family is exposed to toxic fumes and dangerous open fires while cooking. Women often cook on the floor.

3 Deforestation

Chopping down trees for wood fuel or charcoal causes deforestation and is time consuming.

4 Untapped crop yield potential

Crops aren’t growing well due to lack of good (and cheap) fertiliser.
There is no need to cut down trees anymore. Biogas is free; no money is spent on wood or charcoal.

Every day, manure and water goes in, biogas and fertiliser come out. No more costs for cooking fuel, saving 30-45% of household budget (~$53/month).

Crops are growing well due to organic fertiliser from the biogas digester. This provides food security and extra income (~$34/month).

SimGas’ biogas digester:
The GesiShamba

Clean cooking fuel
Family cooks on a clean fuel in an aspirational 21st century clean kitchen. There is no more smoke. And no carbon is emitted.

Gains

1. Money saver
Every day, manure and water goes in, biogas and fertiliser come out. No more costs for cooking fuel, saving 30-45% of household budget (~$53/month).

2. Clean cooking fuel
Family cooks on a clean fuel in an aspirational 21st century clean kitchen. There is no more smoke. And no carbon is emitted.

3. No need to cut down trees
There is no need to cut down trees anymore. Biogas is free; no money is spent on wood or charcoal.

4. Organic fertiliser boosts crop yield
Crops are growing well due to organic fertiliser from the biogas digester. This provides food security and extra income (~$34/month).
Monthly repayment is lower than actual fuel savings and after 24 months there are no more fuel costs

* Potential crop yield increase of 25-400%, resulting in very conservative 34 USD/month estimate
** Wood/charcoal eq., based on survey of 745 customers
*** Price for a Gm² system: USD 150 down payment and instalments of USD 45 x 24 months. Three different loan offers are available: pay in 5 months, 12 months or 24 months.
**** Payment plan available for 5 months, 12 months, 24 months and 36 months. See appendix C for the respective graphs.

### Slurry value due to increased crop yield*

- + 34 USD/month
- + 53 USD/month

### Fuel saving**

### Pay in instalments***

- - 45 USD/month
- 24 months

### Loan offers

<table>
<thead>
<tr>
<th>Size</th>
<th>Pay in 5 months</th>
<th>Pay in 12 months</th>
<th>Pay in 24 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium: 2-3 cows</td>
<td>KSh 40,000</td>
<td>KSh 8,500</td>
<td>KSh 15,000</td>
</tr>
<tr>
<td>Large: 3-4 cows</td>
<td>KSh 50,000</td>
<td>KSh 10,500</td>
<td>KSh 15,000</td>
</tr>
<tr>
<td>X-Large: 5-7 cows</td>
<td>KSh 65,000</td>
<td>KSh 14,000</td>
<td>KSh 15,000</td>
</tr>
</tbody>
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### Monthly payment plan comparable to current fuel costs (only)****

- After down payment, monthly loan costs are the comparable to wood/charcoal
- After 24 months of repayment, the customer has no costs anymore

**Wood/charcoal Costs**

**Biogas System Loan Costs**
This is Ann: 25 years old, owns 3 cows, and 3 months ago, she switched from cooking on woodfuel to biogas only.
We are pleased to inform and update you on our latest innovation

The BioGas Milk Chiller

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Why the Biogas Milk Chiller?

Outlook 2020: Milk Demand Growth vs. Milk Supply Growth

Source: Fonterra, 2015
Why the Biogas Milk Chiller?

But right now, only a fraction of milk makes it to market, often because off-grid farmers cannot keep it cold overnight.
Why the Biogas Milk Chiller?

If milk spoilage can be prevented, there is a huge market opportunity for off-grid farmers and the dairy industry.

Milk production in 2013 in million metric tonnes

- Delivered to dairy processor
- Not delivered to dairy processor

Source: IFCN Database 2014
Why the Biogas Milk Chiller?

It’s time to unlock the promise of night milk.
Why the Biogas Milk Chiller?

We target small scale dairy farmers with 2-10 cows because that’s where both the problem and the solution is found.

A 10L cooling capacity is sufficient for the average farmer living in East & West Africa and almost all of Asia.

Source: IFCN Database 2014
Why the Biogas Milk Chiller?

Our milk chiller allows dairy farmers to cool, store and sell more milk, increasing supply across the chain.

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How does it work?

- 100% Powered by biogas
- Runs on any type of domestic anaerobic digester
- Applies the proven, reliable technology of absorption cooling
- Tailored cooling capacity of 10 Litres milk of night milk
- Cools milk within 4 hours from 35°C to 7°C
- Low gas consumption leaves enough gas to cook
How does it work?

**ICE COMPARTMENT**
Ice is stored in the aluminum compartment. This ice is used for cooling the milk. More ice means colder milk.

**MILK COOLING COMPARTMENT**
When you place the milk-can in the water, the ice melts and the milk is cooled.

**BIOGAS FLAME**
When this flame is ON, ice is made in the ice compartment. The longer the flame is on, the more ice is created.

**EXTRA COOLING COMPARTMENT**
You can keep other products cool in this compartment like vegetables.
What is the status of the project and what is next?

- 3x version 1 prototypes tested in the lab (2014); proof of working principle
- Market assessed in Kenya, Tanzania, Zambia, Rwanda by SNV (2015+2016); proof of market potential
- 4x version 2 prototypes tested in Tanzania (2015); proof of concept in the field
- 14x version 3 prototypes tested in Kenya and Tanzania (2016); value proposition assessed for farmer as well as cooperative, together with IDEO.org
- 3x version 4 prototypes tested in Kenya, ongoing (2017); optimised efficiency, usability and lower costprice

Next step: Pilot with 200 milk chillers in Kenya to proof impact at scale, on the whole dairy value chain (2018)
What do we want to achieve?

Our dream is that by 2025, milk spoilage by off-grid dairy farmers is something of the past;

The Biogas Milk Chiller shall be a widely accepted link in the cold chain for emerging dairy sectors worldwide